Water Supply in the Cumberland Basin

“Primary responsibility for water supply belongs to state and local government”

TDEC
Water Resources Technical Advisory Committee Meeting
08 February 2010

US Army Corps of Engineers
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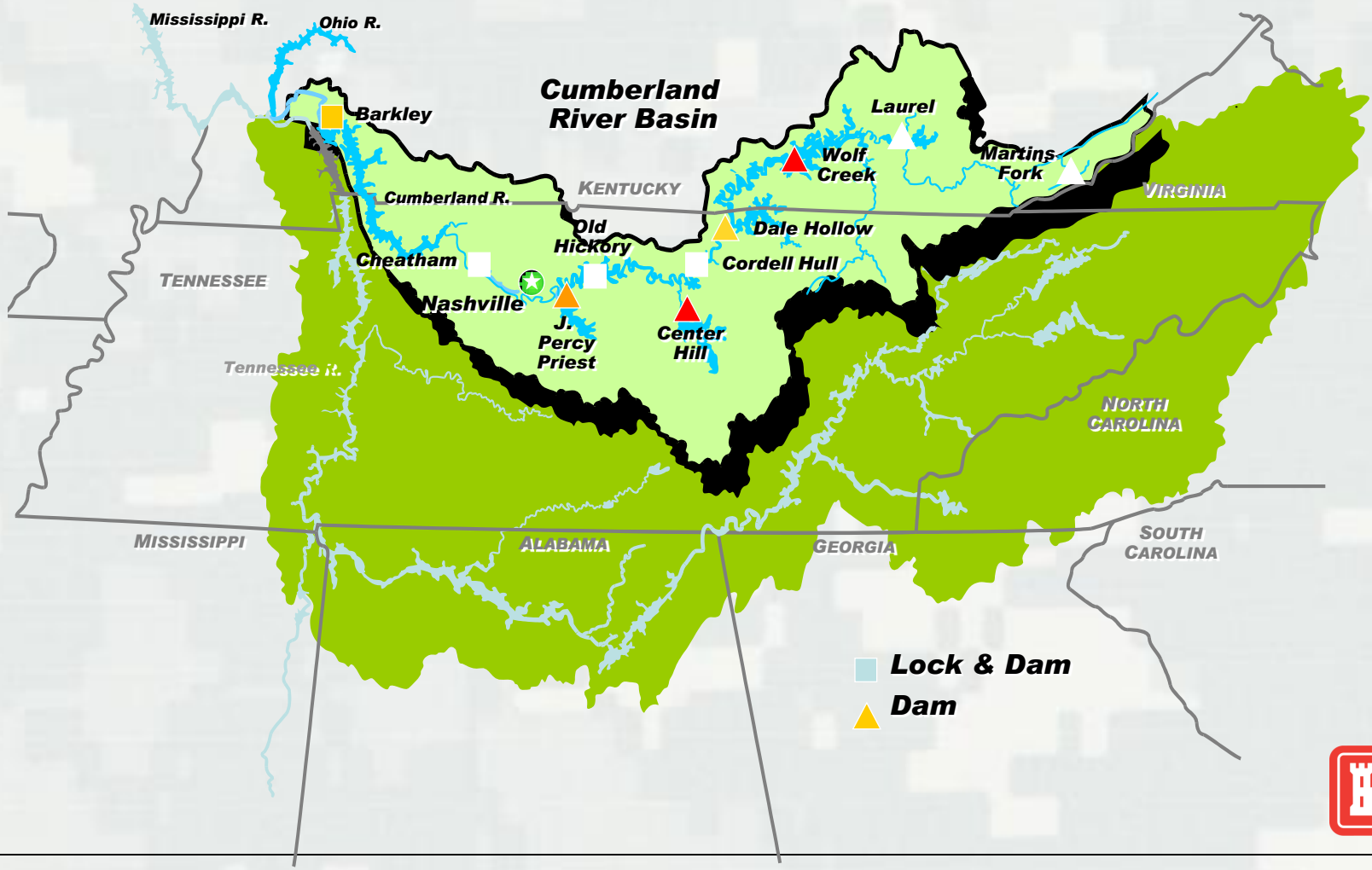
Cumberland River Reservoir System

- 10 multi-purpose reservoir projects
  - Lock and Dam
  - Dam and Reservoir
- Originally authorized purposes
  - Navigation
  - Hydropower
  - Flood damage reduction
- Added Purposes
  - Recreation
  - Water Quality
  - Water Supply

Nashville District Boundary



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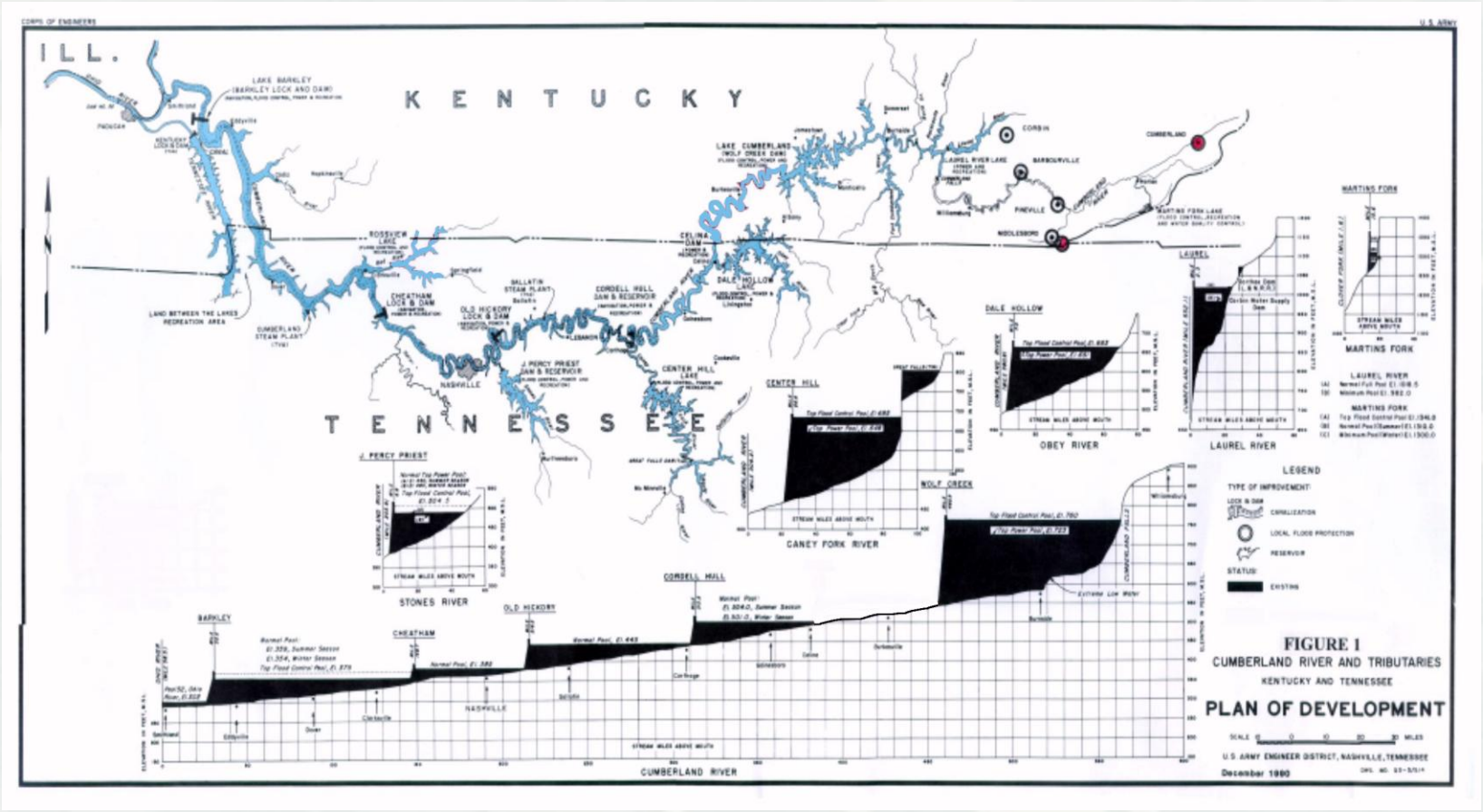
Cumberland River Reservoir System



Applicable Water Supply Legislation

- **Public Law 78-534; 1944 Flood Control Act 1) Section 6; Contracts for Surplus Water 2) Section 8; Water for Irrigation, as mended**
- Public Law 84-99; Emergency Flood Control, as amended
- **Public Law 85-500; 1958 River and Harbor Act, Title III; Water Supply Act of 1958, as amended**
- Public Law 88-140; Permanent Rights to Storage
- Public Law 91-611; 1970 River & Harbor & Flood Control Act, Section 221; Written Agreements, as amended
- Public Law 93-251; 1974 Water Resources Development Act, Section 22; Planning Assistance to States, as amended
- Public Law 101-640; 1990 Water Resources Development Act, Section 322; Reduced Price for Certain Water Supply Storage

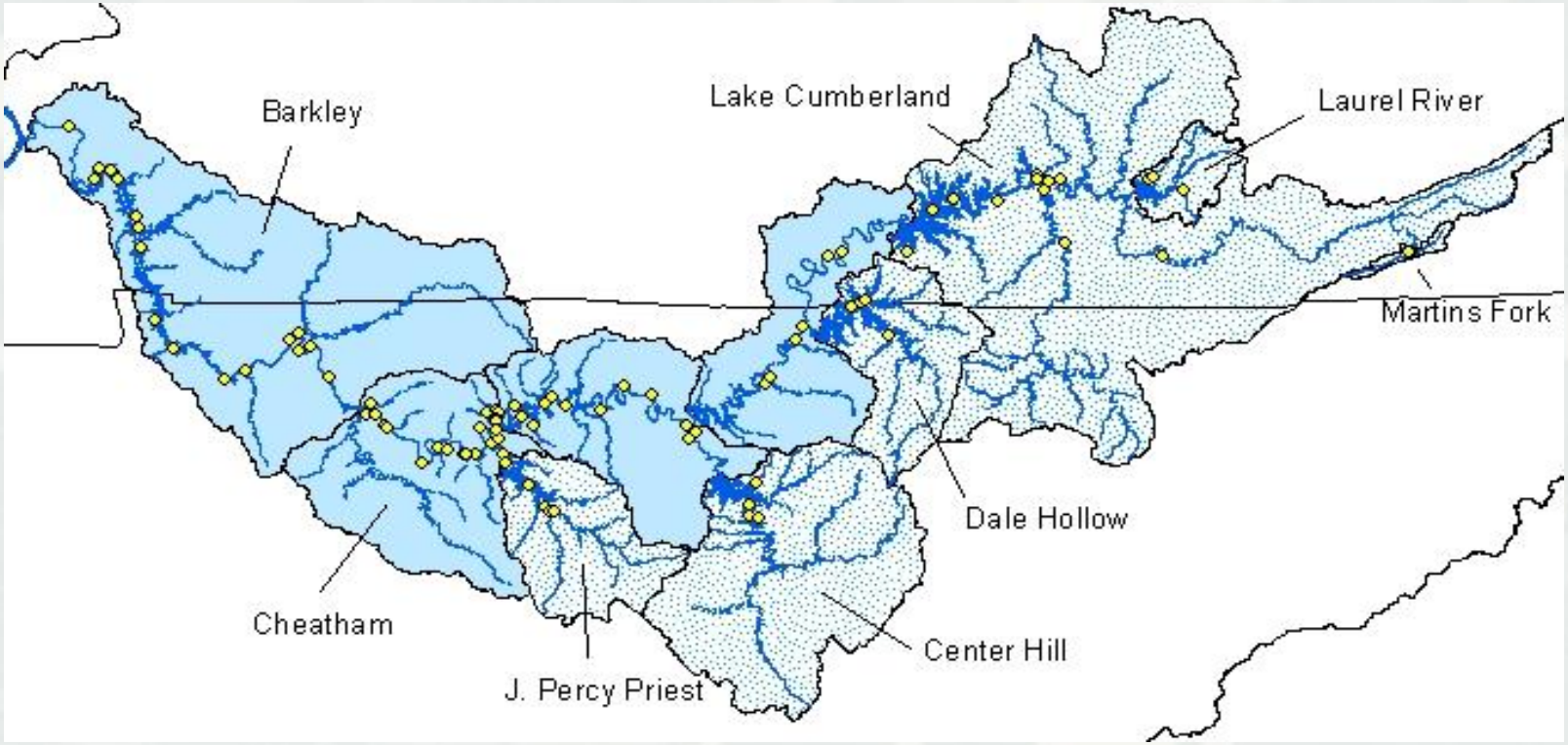
Water Supply as Added Purpose

- Operation and Maintenance funds are allocated by project purpose
- Purposes which generate revenue repay a portion of original project construction costs
  - Water Supply
  - Hydropower
- Per 1958 Water Supply Act: Costs are assigned to water supply in proportion to amount of storage allocated to water supply
- Storage amount required is determined through formal re-allocation study

Water Supply as Added Purpose

- Water supply is an added purpose at most Dam and Reservoir Projects
  - Exception: Lake Cumberland (Legislative prohibition on spending appropriated funds to conduct water supply re-allocation activities)
- Total water supply usage:
  - ~346 MGD
  - 15 Contract Users (Water Supply Agreements)
  - 11 Non-Contract Users

Cumberland River Basin Municipal and Industrial Water Supply Intakes



Water Supply at Lock and Dam Projects

- If no releases are being made from dam and reservoir projects to meet the need (mitigate impacts) of municipal and industrial users with intakes in lock and dam pools:
  - No water supply agreements are needed
  - There will be no fees for storage
  - Permit decisions will be based upon impacts to navigation and to the environment
  - No obligation for the Corps to operate its projects for the benefit of M&I water supply users at lock and dam projects

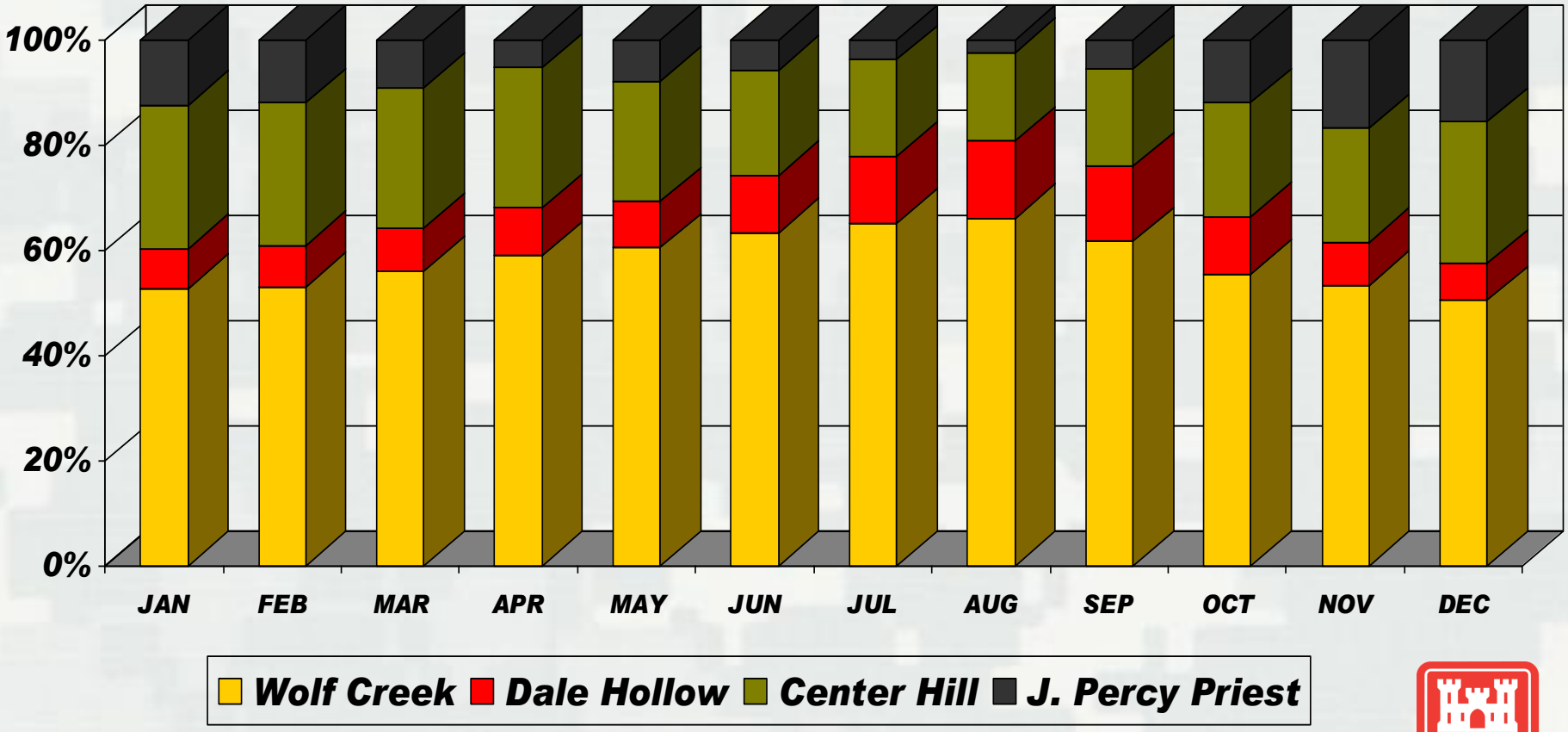
Water Supply at Lock and Dam Projects

- Lock and Dam Projects lack permanent storage (inflow ~ outflow)
  - Water is stored only in tributary projects Lake Cumberland, Center Hill, Dale Hollow, Percy Priest
- Water Supply withdrawals are limited to naturally occurring drought period inflow from local uncontrolled drainage area
- When withdrawals exceed local inflow
  - Potential impact to project purposes
  - Water released from storage in upstream reservoir projects to mitigate impacts

Water Supply at Lock and Dam Projects

- If water is released from dam and reservoir projects to mitigate impacts caused by water supply users on lock and dam projects, then 1958 Water Supply Act dictates a reallocation of storage sufficient to meet those needs is required
- That storage will be reallocated from Lake Cumberland, Dale Hollow, Center Hill and Percy Priest depending upon where on the Cumberland the use is occurring

Average Flow Contribution by Project (%)

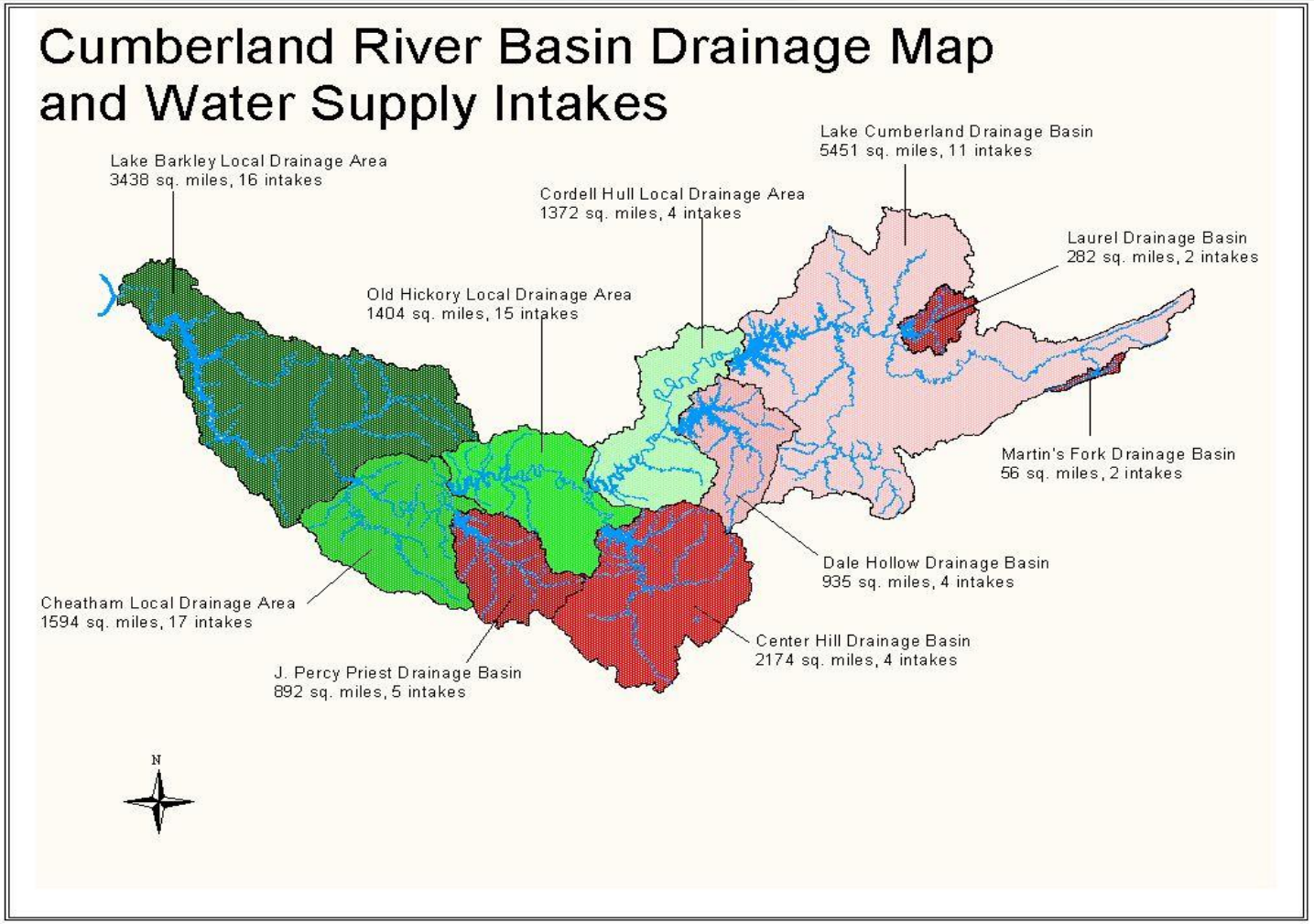


Water Supply at Lock and Dam Projects

Cordell Hull	4 Users (~ 3 MGD withdrawal)
Old Hickory	15 Users (~ 1051 **MGD** withdrawal)
Cheatham	17 Users (~ 144 **MGD** withdrawal)
Barkley	16 Users (~ 2122 **MGD** withdrawal)

Total Water Supply Usage: ~ 3320 MGD

Dam and Reservoir vs. Lock and Dam



Water Supply at Lock and Dam Projects

- Current withdrawals from the Cumberland River indicate a strong need for a water availability study
  - Who is using water?
  - Where is water going (inter-basin transfers)?
  - How much is being used?
  - How much water is available without reallocation?
- Withdrawals from Old Hickory may already be greater than local inflows
- Moratorium in place until water availability study completed

Challenges

- Once in – always in
- Evaluating Impacts to Authorized Purposes due to Water Supply Withdrawals
- Reallocating Storage from Dam and Reservoir Projects for Lock and Dam Project Users
- Pool restrictions at DSAC I Projects
- Inter-basin Transfer of Yield from Storage Reallocated from Dam and Reservoir Projects
- Processes for Tracking Water Use/Users

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